



INVESTIGATOR'S ANNUAL REPORT

United States Department of the Interior
National Park Service

All or some of the information you provide may become available to the public.

OMB # (1024-0236)
Exp. Date (11/30/2010)
Form No. (10-226)

Reporting Year: 2007	Park: Shenandoah NP	Select the type of permit this report addresses: Scientific Study	
Name of principal investigator or responsible official: David Wenos		Office Phone: 540-568-3928	
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Additional investigators or key field assistants (first name, last name, office phone, office email) Name: Dr. Mike Deaton Phone: 540-568-2725 Email: deatonml@jmu.edu			
Project Title (maximum 300 characters): Field Measurements of Metabolic Indices During Hiking			
Park-assigned Study or Activity #: SHEN-00271	Park-assigned Permit #: SHEN-2002-SCI-0023	Permit Start Date: Mar 15, 2002	Permit Expiration Date: May 31, 2008
Scientific Study Starting Date: Mar 15, 2002		Estimated Scientific Study Ending Date: May 31, 2008	
For either a Scientific Study or a Science Education Activity, the status is: Suspended		For a Scientific Study that is completed, please check each of the following that applies: <input type="checkbox"/> A final report has been provided to the park or will be provided to the park within the next two years <input type="checkbox"/> Copies of field notes, data files, photos, or other study records, as agreed, have been provided to the park <input type="checkbox"/> All collected and retained specimens have been cataloged into the NPS catalog system and NPS has processed loan agreements as needed	
Activity Type: Research			
Subject/Discipline: Other			

Purpose of Scientific Study or Science Education Activity during the reporting year (maximum 4000 characters):

I plan on hiking this section of the AT twice in order to compare metabolic differences when hiking with and without trekking poles. At the same time, I will be using the newest generation of triaxial accelerometers that allows long-term measurement of physical activity. The accelerometer records activity counts in three planes of movement, which are used as the basis to estimate energy expenditure. Several outcomes will result from this project. First, it provides a way to map the AT in terms of energy expended and thus lends additional information for planning in terms of food (calories necessary) and overall effort. Second, it provides an extended analysis of the overall effect trekking poles have in terms of energy expenditure during backpacking. Third, it will provide a field comparison of measuring metabolism directly or indirectly via the Cosmed K4b2 metabolic unit versus the RT3 Triaxial Accelerometer. The combination of these instruments allow for more realistic field measurements of energy expenditure. A unique feature of the Cosmed K4b2 is the inclusion of a 12 channel GPS unit that integrates speed, distance, and altitude with the metabolic data.

Other extensions for this project are being considered as well. In my conversations with the head ranger of Geographic Information Systems for the Shenandoah National Park, he expressed interest in developing a grading system for all of the trails in the park based on measures of energy expenditure. In an effort to assist park visitors with accurate hiking information, a rating scale can advise hikers of the actual difficulty of trails they choose to hike. Obviously, this aspect of the study would be a long-term project.

The results of this study will be disseminated through subsequent publications and presentations.

Findings and status of Scientific Study or accomplishments of Science Education Activity during the reporting year (maximum 4000 characters):

No activity was conducted this report year.

For Scientific Studies (not Science Education Activities), were any specimens collected and removed from the park but not destroyed during analysis?

No

Funding specifically used in this park this reporting year that was provided by NPS (enter dollar amount):

\$0

Funding specifically used in this park this reporting year that was provided by all other sources (enter dollar amount):

\$0

List any other U.S. Government Agencies supporting this study or activity and the funding each provided this reporting year:

Paperwork Reduction Act Statement: A federal agency may not conduct or sponsor, and a person is not required to respond to a collection of information unless it displays a valid OMB control number. Public reporting for this collection of information is estimated to average 1.625 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the forms. Direct comments regarding this burden estimate or any aspect of this form to Dr. John G. Dennis, Natural Resources (3127 MIB), National Park Service, 1849 C Street, N.W., Washington, DC 20240.